

**BLOCK POLYMER PROCESSING FOR MESOSTRUCTURED INORGANIC
OXIDE MATERIALS**

5 ABSTRACT OF THE DISCLOSURE

Mesoscopic, hydrothermally stable metal oxide-block copolymer composites formed by combining structure directing amphiphilic block copolymers with inorganic compounds of multivalent metal species whereby the inorganic compounds polymerize and self-assemble with the block copolymers, forming
10 mesoscopic composites; and at least partially filling the mesoscopic composites with a material having a dipole moment variably responsive to a predetermined stimulus; used in catalytic, sorption, catalysis, separation, optoelectronics, and other applications; whereby a mesoporous silica is formed at 35-80°C by dissolving 4.0 g Pluronic P123 (PEO₂₀ PPO₇₀ PEO₂₀) in 30 g water and 120 g 2M
15 HCl solution, stirring at 35° C; adding 8.50 g TEOS; stirring at 35° C for 22 h; aging at 100° C for 24 h; filtering, washing, and air-drying at room temperature; increasing from room temperature to 500° C over 8 h; and heating at 500° C for 6 h, such reaction varying depending on the composite being formed.